



Viral effects of social network and media on consumers' purchase intention☆



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ABSTRACT

This study applies structural equation modeling (SEM) and fuzzy-set qualitative comparative analysis (fsQCA) method to data from social network media (SNM) users' surveys to identify possible SNM viral effects on consumers' purchase intention. SEM assesses the relationship between the criteria; fsQCA assesses the cause-and-effect process. Data from 36 valid variables validate the research model. This research surveys SNM users who use at least three major SNM platforms (i.e. Facebook, Instagram, and Youtube). Combination of Theory Reasoned Action (TRA), Information Adaption Model (IAM), perceived risk, and social interaction as additional external constructs shows source credibility and social influence critically affect attitude and subjective norms, which lead to purchase intention. SEM results show that social integration has no direct effect on subjective norms. However, fsQCA results show that social influence together with perceived risk in SNM sites affects consumers' purchase intention.

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1. Introduction

Since last decade, social network and media (SNM) sites are growing rapidly (Farooq & Jan, 2012). SNM sites benefit marketers and consumers. Online SNM sites such as Twitter, Facebook, and Instagram affect individual's lives significantly by creating links among individuals that trust SNM sites.

Scholars define SNM as a graph of relationships and interactions within a group of individuals, often mediating in spreading information, ideas, and influence among the members (Kempe, Kleinberg, & Tardos, 2003). Most web-based SNM services provide means for online interaction, allowing the sharing of ideas, activities, events, and interests within individual networks. These services act as word-of-mouth (WOM) because participants repeat the information on SNM (Zhaveri, 2013).

SNM viral marketing is a special form of electronic WOM (eWOM) marketing that encourages and facilitates consumers' exchange of favorable opinions on products/services, companies, or brands; this eWOM also allows passing along promotional messages to relatives and friends on SNM sites. Companies are adopting viral marketing strategy because of its low-cost management.

This study addresses the research gap regarding the importance of understanding SNM viral marketing's effect on consumers' purchase intention. The purpose is to measure SNM sites' viral effect on product/service purchase intention with Theory Reason Action (TRA),

Information Adoption Model (IAM), and the perceived risk. This approach allows researchers and practitioners to deepen their knowledge and to take advantage from SNM viral marketing.

2. Literature review

This study combines three popular theories to predict consumers' purchase intention and information adoption: TRA (Ajzen & Fishbein, 1980), IAM (Sussman & Siegal, 2003), and perceived risk (Bauer, 1960).

2.1. Viral marketing

Viral marketing is the consumers' act of eWOM on SNM sites; viral marketing spreads like a virus and takes advantage of multiplication to transmit the message to thousands and even millions (Vilpponen, Winter, & Sundqvist, 2006). According to Oden and Larsson (2011), viral marketers use buzzwords, images, videos, and blog articles/reviews. Viral marketing has a low cost, provides a high-and-rapid response rate, and offers an unprecedented opportunity to connect both domestically and internationally (Yang, Liu, & Zhou, 2011). Therefore, companies adopt this strategy to disrupt consumers via online, creating a digital "hype" to promote product/services. Individuals' attitudes towards viral messages in SNM determine those people's participation in the process that leads to purchase intention (Camarero & San José, 2011). Viral marketing is also demanding on social interaction, often regarding products, to attract users to virtual communities that influence their buying decision (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Because viral marketing offers product/service online reviews, users' risk perceptions in purchasing a product owe primarily to the

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information and interaction in those sites. (Beldad, Jong, & Steehouder, 2010).

2.2. Theory Reasoned Action (TRA)

TRA (Ajzen & Fishbein, 1980) is a model to predict behavior. Ajzen (2005) reports that attitude and subjective norms influence the intention to perform a particular behavior. TRA assumes that intentions capture the motivational factors influencing behavior: attitudes toward the behavior (the degree to which a person has a favorable or unfavorable evaluation of the behavior) and subjective norms with respect to the behavior (the perceived social pressure to perform or not perform the behavior). Peer communication between consumers, as an information giver, has a strong influence on consumers' decision-making (Smith, Menon, & Sivakumar, 2005). In SNM settings, consumers learn attitudes and purchase-intentions through written messages that peers send (Wang, Yu, & Wei, 2012). Likewise, subjective norm in technology acceptance refers to social norms in terms of external influence (Bhattacharjee & Sanford, 2006).

In line with these studies, this research proposes the following propositions:

P1. Consumers' attitude toward information usefulness positively affects intention to purchase virally marketed product/service.

P2. Consumers' subjective norm positively affects intention to purchase virally marketed product/service.

2.3. Information Adoption Model (IAM)

IAM (Sussman & Siegal) is an integration of Technology Acceptance Model (TAM) (Davis, 1989) and Elaborated Likelihood Model (Petty & Cacioppo, 1986; Petty, Cacioppo, & Goldman, 1981) with dual-process models of informational influence. According to Sussman and Siegal (2003), TAM and TRA models are not fit for information adoption. Participants of virtual communities (e.g., SNM sites) seek information and knowledge (Zhang & Hiltz, 2003). In online environments, people have complete freedom to publish and express their feelings. Therefore, users consider the expertise and trustworthiness of the contributors before adopting or rejecting the information (Cheung, Lee, & Rabjohn, 2008). In opinion posts, users scan the information before making purchase decisions (Pitta & Fowler, 2005).

Consumers' argument quality and source credibility affects consumer's attitude toward information usefulness. Argument quality refers to arguments' persuasive strength (Bhattacharjee & Sanford, 2006). Source credibility refers to the extent to which consumers perceive that an information source is believable, competent, and trustworthy (Petty & Cacioppo, 1986). The quality of arguments determines consumers' attitude toward information usefulness. Further, source credibility has a high influence on opinion; high credibility sources have a greater role on opinion change than low credibility sources do.

P3. Argument quality on SNM sites positively affects consumers' attitude towards product/service information usefulness.

P4. Source credibility on SNM sites positively affects consumers' attitude towards product/service information usefulness.

2.4. Social interaction

Qiu and Benbasat (2005) report that the best marketing strategy is offering information and interactivity in product/service. Stromer-Galley (2004) defines interactivity as the interpersonal communication occurring through an SNM medium. The communication processes in these sites create social interaction. In SNM contexts, social interaction

is the subjective norm that refers to social pressure in performing or not performing the behavior. Online social pressure is a form of social interaction. This research divides social interaction into two independent predictors: social integration and social influence. According to Rubin, Watt, and Ramelli (2012), social integration refers to members' transparency regarding personal, faith, and community interactions in the merging world of SNM applications; transparency on SNM sites could influence consumers' subjective norms to decide a product/service.

Weber (1947) defines social influence as a practice of two or more people trying to influence each other's intentions to bring such social pressure into their behavior. Subjective norm reflects how the perception of references and interpersonal influences (e.g. family, friends, and relatives) affects and shapes consumers' behavior (Lin, 2007).

P5. Social integration positively affects consumers' subjective norm.

P6. Social influence positively affects consumers' subjective norm.

2.5. Perceived risk

Perceived risk refers to the nature and amount of risk a consumer perceives in a particular purchase (Bauer, 1960). This study defines perceived risk as what consumers would lose and how the individual would feel if the consequences of a behavior were negative. In SNM sites, uncertainty in perceived risk derives from three factors: (1) consumers' own ability to accurately judge the resulting experience, (2) consumers' difficulties in making an overall evaluation on the sites, and (3) the difference between expectations and experience in product/service.

This study groups and modifies existing types of risk to adapt to viral marketing on SNM sites (intangibility) expectation and context. The types of risks are (1) performance risk, (2) financial risk, (3) social risk, and (4) psychological risk. Perceived risk is powerful in explaining consumers' behavior considering influences often motivate consumers to avoid mistakes rather than to maximize utility in purchasing and expecting loss.

P7. Consumers' perceived risk negatively affects intention to purchase a virally marketed product/service.

3. Method

3.1. Data collection

This study uses data from electronic surveys that users receive through SNM sites, emails, and Internet forums. Non-random snowball sampling method for cost effectiveness and respondents' distribution of questionnaires to friends with similar characteristics increase response rate. Ho and Dempsey (2010) report young adults are the demographic group with the highest rate of Internet adoption and SNM sites use; thus, this study collects data from college students of different majors in Indonesia. The sample of participants has experience in at least three of the following SNM sites: Facebook, Twitter, Instagram, Pinterest, or Youtube, and admits connection to those sites' viral contents for 4–6 years through buzzwords, blogs, images, or videos. Users acquainted with at least three different types of SNM sites will most likely understand the term viral. Hence, results fit predictability and generality.

3.2. Procedure

This research uses a translated version of the questionnaire from previous studies to distribute in Indonesia. The Indonesian version has minor modifications and different item sequence; this version

introduces eWOM and viral marketing on SNM sites to refine the wording and increase sample understandability. First, 10 respondents with high experience in SNM assessed wording clarity (Wu, Hwang, Fiegantara, & Pai, 2012). Then, a second pretest of 20 respondents highly acquainted with SNM also completed a pilot test to ensure content validity and reliability within the target context. The final survey consists of 200 respondents, 118 of which gave valid responses.

3.3. Measures

Previous studies provide the measurement variables for this study. Some changes and adjustment ensure a better fit of the viral marketing context. Most measuring items are adaptations of revalidated measures in TRA, IAM, and perceived risk. This study measures the 36 variables using 5-point Likert scale from “strongly disagree” to “strongly agree,” with multiple items for each construct.

Cronbach alpha and confirmatory factor analysis on SmartPLS software test the constructs' validity and reliability. Next, structural equation modeling (SEM) analyzes the strength and direction of the relationships between constructs (Hsu & Lin, 2008). This study also uses fuzzy-set qualitative comparative analysis (fsQCA) to draw in-depth insights into how multiple configurations of strategic orientations drive into different capabilities (Hwang, 2014) and better business performance.

4. Empirical analysis

4.1. Results

This research detects questionnaire validity through internal consistency and convergent validity criteria. According to internal consistency, valid items should yield values over 0.7 (Nunnally, 1967). Table 1 shows all items present a value greater than 0.86. Fornell and Larcker (1981) present three convergent validity criteria. (1) Most constructs present factor loadings greater than 0.72, exceeding the 0.5 threshold, thus, the items of the same construct share a great amount of variance in common (Hair, Anderson, Tatham, & Black, 1998). (2) The average amount of Average Variance Extracted (AVE) of each construct should be greater than the variance and exceed 0.5 because of the measurement error for that construct (Table 1). Finally, (3) discriminant validity is the correlation between the individual dimensions; results should be under the average amount of variation in the dimensions square root of AVE. Table 2 shows correlations between constructs are under 0.9 (Hair et al., 1998), whereas subjective norms shows 0.9 correlations are valid because they reach the acceptance level.

SEM approach tests the relationships in the research model (Fig. 1). Table 3 shows correlation coefficients (β) and research model's significance effects. Six paths argument quality ($\beta = 0.24^*$), source credibility ($\beta = 0.57^{***}$), attitude ($\beta = 0.40^{***}$), social influence ($\beta = 0.69^{***}$), subjective norms ($\beta = 0.32^{***}$), and perceived risk ($\beta = -0.19^{**}$) are significant and strongly affect behavioral intention. Social integration

Table 1
Factor loadings, average variance extracted, and items internal consistency.

	Constructs	AQ	SC	AT	SINT	SINF	SN	PR	BI
Factor Loadings	1	0.71	0.81	0.89	0.86	0.79	0.92	0.68	0.80
	2	0.80	0.81	0.87	0.88	0.82	0.91	0.74	0.79
	3	0.78	0.84	0.85	-	0.83	0.87	0.77	0.87
	4	0.84	0.76	0.78	-	0.87	-	0.76	0.80
	5	-	-	0.75	-	0.84	-	0.78	-
	6	-	-	0.79	-	-	-	0.78	-
	7	-	-	-	-	-	-	0.73	-
	8	-	-	-	-	-	-	0.70	-
AVE		0.68	0.65	0.68	0.75	0.69	0.81	0.55	0.67
Cronbachs Alpha		0.86	0.88	0.93	0.86	0.92	0.93	0.91	0.89

Table 2
Discriminant validity analysis.

	AQ	AT	BI	PR	SC	SN	SINF	SINT
AQ	0.78							
AT	0.69**	0.82						
BI	0.50**	0.59**	0.82					
PR	-0.11**	-0.12**	-0.36**	0.74				
SC	0.77**	0.76**	0.52**	-0.09**	0.80			
SN	0.40**	0.51**	0.61**	-0.39**	0.51**	0.90		
SINF	0.61**	0.63**	0.66**	-0.38**	0.65**	0.72**	0.83	
SINT	0.53**	0.59**	0.56**	-0.27**	0.53**	0.72**	0.68**	0.87

Argument quality AQ, attitude AT, behavior intention BI, perceived risk PR, social influence SINF, social integration SINT, source credibility SC, subjective norm SN. For discriminant validity, square root of AVE should be larger than correlations.

($\beta = 0.04$) shows a very weak effect on subjective norms and is non-significant for behavioral intention. Thus, results support Propositions 1, 2, 3, 4, 6, and 7, whereas results fail to support H5.

4.1.1. Discussion

The findings respond to this study's research question. This research shows social influence exerts as first dominant influence on subjective norms, whereas one of IAM external constructs, source credibility, exerts second dominant influence on consumers' attitude. As TRA theorizes in prior studies, these results report that both attitude and subjective norms are key consistency determinants of consumers' purchase intention on virally marketed product/service via SNM. Both argument quality and perceived risk, although presenting a weak influence on purchase intention, are predictors of consumer's behavior intention. One of the contributions of this study is the combination of TRA and IAM, which creates a new context to understand different variations in behavior intention of viral marketing via SNM research.

4.2. FsQCA

Ragin (1987) explains fsQCA's use of Boolean algebra to approach theoretical sets, thus providing an alternative to regression analysis to identify cause-and-effect processes. FsQCA maintains the integrity of individual cases in analyzing the data by identifying combinations of causal conditions that lead to the outcome (Woodside, Eunju, & Tzung, 2012).

4.2.1. Calibration

According to Ragin (2008), fsQCA requires data calibrations to transform variables into structured fuzzy sets ranging from 0 (full non-membership) to 1 (full membership) by using three thresholds—0.05 (full non-membership), 0.5 (cross-over point), and 0.95 (full membership)—to convert values into units at the same logic.

4.2.2. Analysis

FsQCA generates combination of causal conditions and outcome, where Boolean algebra and algorithms identify configurations leading to high performance by reduction of numerous, complex causal conditions to simplify combinations. Thus, fsQCA considers four categories of conditions: the presence/absence of sufficiency and the presence/absence of necessity. The truth-table analysis yields three different solution terms: (1) complex (using no logical remainders), (2) parsimonious (all logical remainders apply), and (3) intermediate (using only logical remainders that make sense) (Rihoux & Ragin, 2009).

For solution interpretation, Fiss (2011) proposes core and peripheral conditions. Core conditions are solutions belonging to both parsimonious and intermediate that show a strong causal relationship with the outcome, whereas peripheral conditions are solutions appearing only in the intermediate solutions and presenting a weaker relationship with outcome.

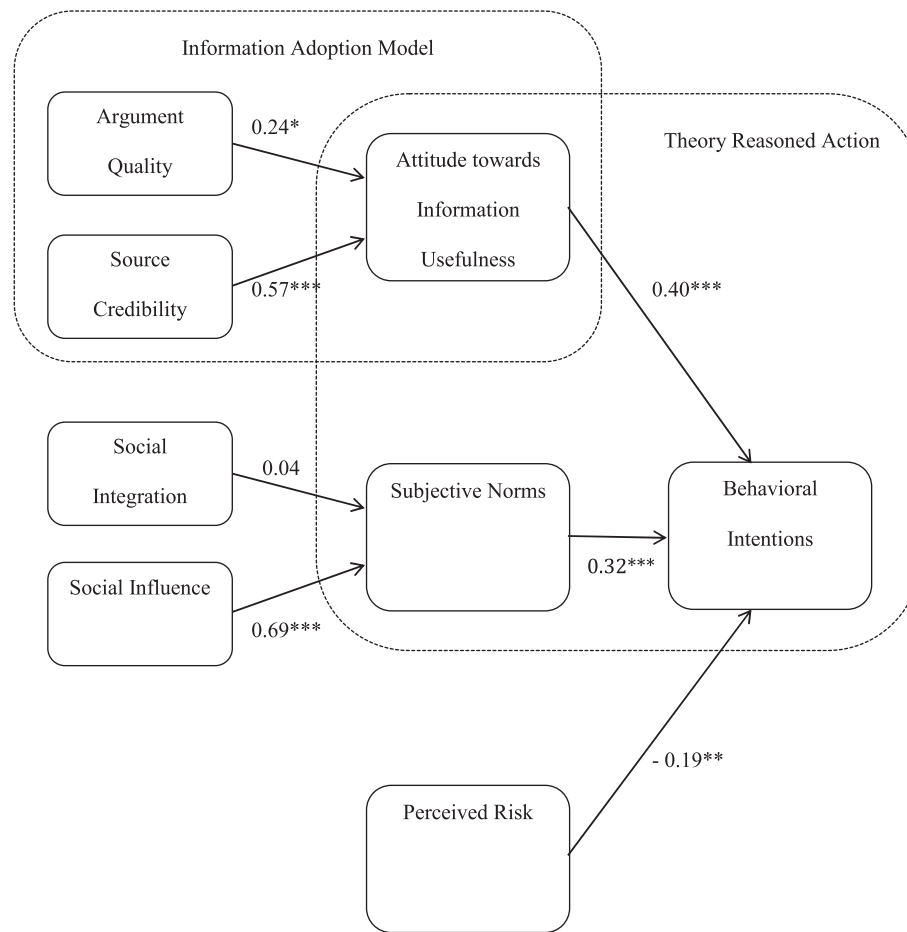


Fig. 1. SEM analysis of research model. Significance level: p -value < 0.01.

4.2.3. Results

Following Ragin (2008), fsQCA analysis results consist of three solutions in Table 4, which show acceptable consistency of more than 0.85. All these three causal recipes contain source credibility and the configurations of the following five antecedents: argument quality, social integration, social influence, subjective norms, and perceived risk. Credible source and social integration in the form of review transparency about new products/services, with the influence from friends and relatives as additional configuration, affect users' purchase intention on SNM sites. However, credible source in combination with argument quality and reviewers' transparency leads to users' subjective norms, which are sufficient to achieve good performance on affecting users' intention on SNM sites. Users posting about new products/services receive good reviews and arguments as responses. Interaction on SNM sites builds transparency. On the one hand, both solution 1 and 2 are strategies that emphasize transparency of credible sources within SNM viral marketing as an important information about product/service that

influences users' purchase intention. Thus, the higher the number of credible sources and their information transparency, the higher users' purchase intention on SNM sites.

On the other hand, solution 3 presents the highest consistency, suggesting the configurations within argument quality, source credibility, and the supplementary of social influence, subjective norms, and perceived risk are essential to predict users' intention on SNM sites. The lower perceived risk in solution 3 means users are ignoring risk on SNM and only receive credible reviews and influence from friends and relatives regarding products/services on SNM. Although perceived risk is important in the context of Internet commerce, in SNM viral

Table 3
Correlation coefficient and p -value.

	Correlation Coefficient (β)
AQ > AT	0.24*
SC > AT	0.57***
SINT > SN	0.04
SINF > SN	0.69***
AT > BI	0.40***
SN > BI	0.32***
PR > BI	-0.19**

Table 4
Configurations to achieve users' purchase intention on SNM.

	1	2	3
Argument quality		0	0
Source credibility	0	0	0
Attitude			
Social integration	0	0	
Social influence	0		0
Subjective norms		0	0
Perceived risk			0
Consistency	0.88	0.88	0.90
Raw Coverage	0.61	0.62	0.38
Unique Coverage	0.02	0.02	0.04
Total Consistency	0.85		
Total Coverage	0.67		

Note: 0/0 indicates the presence of a condition; 0/0 indicates the absence of a condition. 0/0 indicates core conditions and 0/0 indicates peripheral conditions. The study excludes solution 2A, 2B, and 3 from further interpretation because of very low unique coverage.

marketing about new product/service, giving and building users' perceived risk is not necessary.

5. Conclusion and future research

This research demonstrates the importance of IAM and social integration with prior use of TRA to study motivational factors in consumers' intention to purchase virally marketed product/service via SNM. SEM focuses on variable connection and its effect, whereas fsQCA motivates researchers and practitioners to learn and discuss more about cases.

The SEM results imply that source credibility and social influence are critical in creating attitudes toward information usefulness and subjective norms that lead to consumers' purchase intention. Consumers are likely to assess source credibility over argument quality because credible reviewers form positive attitudes toward purchase intention. Likewise, influence from friends and relatives creates pressure by forming subjective norms that motivate consumers' intention. Apparently, social influence has a higher effect on subjective norms than on users' perception of online reviews' transparency.

In the highest consistency of fsQCA results—unlike in SEM results—perceived risk is not a significant strategy configuration leading to the best performance regarding influence on users' purchase intention in the context of SNM viral marketing. For practitioners who adopt a SNM low-cost marketing strategy, hiring a credible source to write reviews and adopting reviewers' argument quality to spread the words of new products/services are the essential strategic movements to deliver users' purchase intention on SNM sites while minimizing their risk perception and getting best practice with utmost outcome.

Finally, this research relies only on group of respondents in Indonesia; however, future research on SNM viral marketing should collect data from multiple countries. Researchers' evaluation should also consider cross-country comparisons to unravel potential outcomes and reveal the best strategic configurations to achieve the best performance, which would clarify how individual dimensions contribute to and support business performance. In addition, practitioners should know their cases at all stages of the analysis to the maximum detail; practitioners should also clarify which paths in the solution formula cover which cases logically, both theoretically and empirically.

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